

## COMBINED PHASE COMPARATOR AND CHARGE PUMP CIRCUIT

## ABSTRACT OF THE DISCLOSURE

A phase comparison of timing signals is made by combinational circuitry which receives the timing signals and a window signal, the window signal identifying edges of  
5 the timing signals to be compared. The comparison may result in a charge pumped output which can be fed back to control the phase of one of the timing signals. The phase comparator and charge pump circuit can be included in a multiplier circuitry in which the phase of an input signal is directly compared to the phase of an edge of the multiplied signal.

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